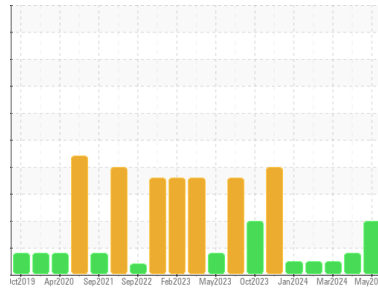




OIL ANALYSIS REPORT

Sample Rating Trend



DEGRADATION



Area
(19C418)
Machine Id
422021-402156
Component
Diesel Engine
Fluid
PETRO CANADA DURON SHP 15W40 (--- GAL)

DIAGNOSIS

Recommendation

We advise that you check for faulty combustion, plugged air filters, or aftercoolers. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. NOTE: High solids (carbon/soot) in the sample have limited the accuracy of Infra-Red data including Total Base Number (TBN) value.

Wear

All component wear rates are normal.

Contamination

There is an abnormal amount of solids and carbon present in the oil.

Fluid Condition

The BN level is low.

SAMPLE INFORMATION

method	limit/base	current	history1	history2
Sample Number	Client Info	GFL0109300	GFL0109411	GFL0109320
Sample Date	Client Info	10 May 2024	29 Apr 2024	07 Mar 2024
Machine Age	hrs	7095	7068	6978
Oil Age	hrs	370	343	253
Oil Changed	Client Info	Changed	Not Changd	Not Changd
Sample Status		ABNORMAL	ABNORMAL	NORMAL

CONTAMINATION

method	limit/base	current	history1	history2
Water	WC Method >0.2	NEG	NEG	NEG
Glycol	WC Method	NEG	NEG	NEG

WEAR METALS

method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185m >120	20	18	12
Chromium	ppm	ASTM D5185m >20	<1	<1	0
Nickel	ppm	ASTM D5185m >5	0	<1	<1
Titanium	ppm	ASTM D5185m >2	1	1	1
Silver	ppm	ASTM D5185m >2	0	<1	0
Aluminum	ppm	ASTM D5185m >20	1	2	2
Lead	ppm	ASTM D5185m >40	2	2	1
Copper	ppm	ASTM D5185m >330	2	2	<1
Tin	ppm	ASTM D5185m >15	<1	<1	<1
Vanadium	ppm	ASTM D5185m	0	<1	0
Cadmium	ppm	ASTM D5185m	<1	<1	0

ADDITIVES

method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185m 0	<1	<1	2
Barium	ppm	ASTM D5185m 0	0	0	0
Molybdenum	ppm	ASTM D5185m 60	59	54	53
Manganese	ppm	ASTM D5185m 0	<1	<1	<1
Magnesium	ppm	ASTM D5185m 1010	968	843	864
Calcium	ppm	ASTM D5185m 1070	1101	993	929
Phosphorus	ppm	ASTM D5185m 1150	1024	1002	982
Zinc	ppm	ASTM D5185m 1270	1243	1147	1165
Sulfur	ppm	ASTM D5185m 2060	3493	3027	2894

CONTAMINANTS

method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185m >25	3	3	3
Sodium	ppm	ASTM D5185m	1	<1	<1
Potassium	ppm	ASTM D5185m >20	<1	2	2
Fuel	%	ASTM D3524 >3.0	<1.0	<1.0	<1.0

INFRA-RED

method	limit/base	current	history1	history2	
Soot %	%	*ASTM D7844 >4	▲ 4.6	▲ 4.1	3.1
Nitration	Abs/cm	*ASTM D7624 >20	11.3	9.8	7.6
Sulfation	Abs/.1mm	*ASTM D7415 >30	27.8	25.6	22.0

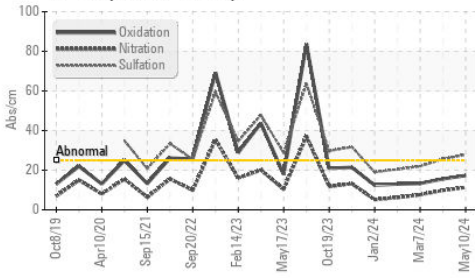
FLUID DEGRADATION

method	limit/base	current	history1	history2	
Oxidation	Abs/.1mm	*ASTM D7414 >25	17.3	15.6	13.3
Base Number (BN)	mg KOH/g	ASTM D2896 9.8	▲ 0.0	7.6	8.2

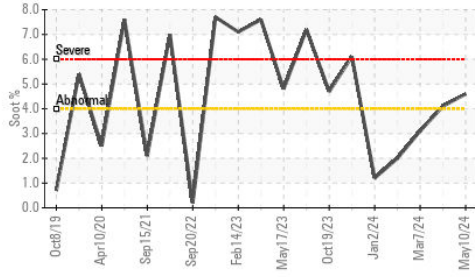


OIL ANALYSIS REPORT

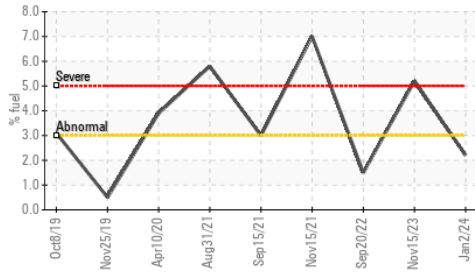
▲ FT-IR (Direct Trend)



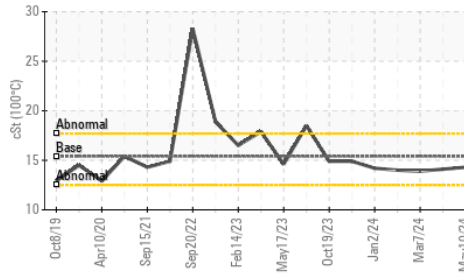
▲ Soot %



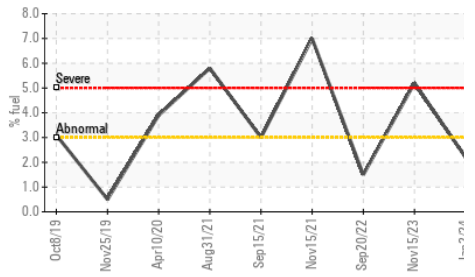
▲ Fuel Dilution



▲ Viscosity @ 100°C



▲ Fuel Dilution

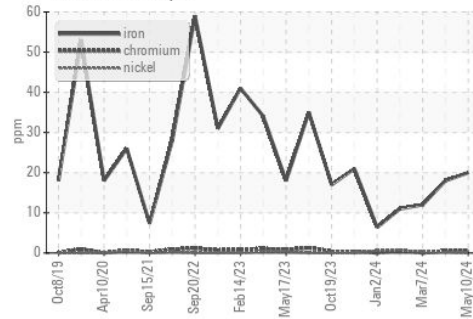


VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	*Visual	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG

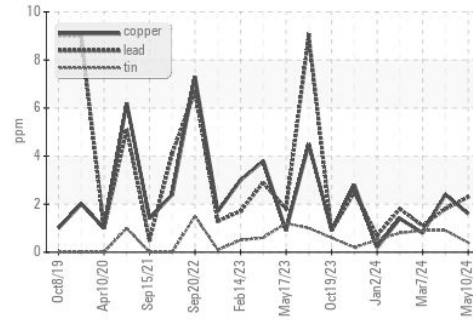
FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 100°C	cSt	ASTM D445	15.4	14.3	14.1

GRAPHS

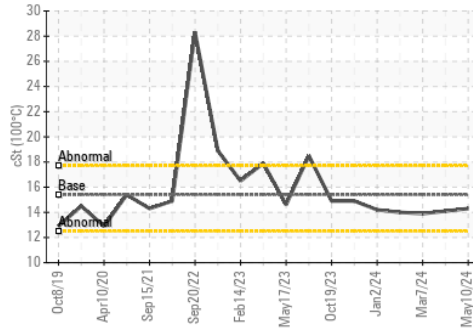
▲ Ferrous Alloys



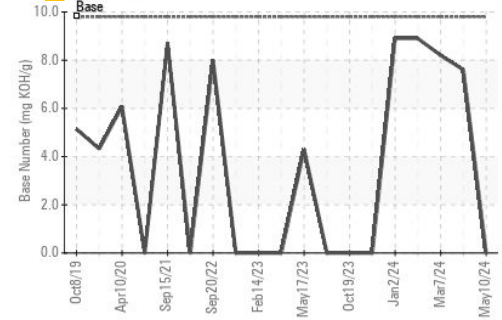
▲ Non-ferrous Metals



▲ Viscosity @ 100°C



▲ Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : GFL0109300

Lab Number : 06176963

Unique Number : 11023016

Test Package : FLEET (Additional Tests: FuelDilution, PercentFuel)

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Received : 13 May 2024

Tested : 14 May 2024

Diagnosed : 14 May 2024 - Don Baldrige

GFL Environmental - 892 - Pauls Valley Hauling

1910 S CHICKASAW STREET

Pauls Valley, OK

US 73075

Contact: Tony Graham

tgraham2@wcamerica.com

T:

F: